"parity pricing," has been devised.[59]

The rationale for competitive neutrality is not too difficult to explain intuitively. The incumbent owner of a bottleneck or essential facility may well have the incentive to overcharge for access to the facility in order to minimize effective competition from entrants. Competitive neutrality requires that the price the owner of the bottleneck facility charges to its competitors for access to the facility be the same as the amount the bottleneck owner must itself forego when it uses the facility. If the bottleneck owner charges a higher access price to rivals than it charges to itself, it will be able to out compete those rivals, even if they are the more efficient providers of the final products in question. The reverse will be true if rivals pay less for access than the bottleneck owner does, because in that case an inefficient competitor may be able to take the final-product business away from an efficient bottleneck owner. In either case, the business may go to an inefficient supplier and the consuming public will have to bear the unnecessary costs.

The issue arises here primarily because regulators have in the past imposed universal-service obligations upon the LECs. That is, they have required the LECs to provide local service to household customers at prices that do not cover the pertinent incremental costs, in order to make telephone subscription as widespread as possible. If the LEC were forced to bear the entire cost of the shortfall in serving these customers, with no contribution from entrants, then competitive neutrality would indeed be violated.

[59]The discoverer of the rule is Robert D. Willig, and one of the present authors has been substantially involved in its propagation.

But this is clearly not what the Telecommunications Act requires. Rather, a universal service fund is to be established, to which all entrants will have to contribute suitable amounts.[60] It should be obvious that if these amounts are determined appropriately, then competitive neutrality will be preserved without any need to manipulate access charges for the purpose.

2. The Regulatory Compact and Historical Costs of Assets. Sidak and Spulber also suggest that implied regulatory commitments require that investors be allowed to recoup the full historical costs of their investments, not the replacement cost of their assets. Yet, as discussed above,[61] all that investors can legitimately expect is that they will be permitted to earn a rate of return on their investments (including recoupment through depreciation) that is consistent with the competitive market standard. In effect, investors have been protected from the losses that a failed competitive enterprise would suffer, but they have also been precluded from enjoying the high earnings of a very successful competitive firm. Instead, they have been promised the opportunity to earn returns that one could expect from investment in an average competitive firm of comparable risk and average profitability. The implication is that the regulatory contract promises no more than the recoupment of asset values that competitive markets provide on the average -- the replacement cost of those assets, not their historical cost. We see no reason to believe that the regulatory compact

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[60] See Part II supra.

[61] See Part I supra.

requires compensation greater than this.[62]

3. Deprivation of the Opportunity to Charge Supercompetitive Prices or for Prices to Include Some Monopoly Profit. Numerous passages in the Sidak and Spulber article appear to imply that any expected earnings of which investors are deprived by a new law or a revised regulation is an indefensible taking, damaging to economic efficiency and violating the Constitution.[63] Surely, they do not mean that. Deprivation of the right to charge supercompetitive prices or charge prices that contain monopoly elements can be likened to the deprivation of future loot suffered by a burglar when a new law facilitates his arrest and conviction. Moreover, we cannot conceive of any regulator who ever suggested that such pricing practices were entitlements subject to regulatory protection. Sidak and Spulber are well aware that such pricing practices are inconsistent with the competitive-pricing model. They are also well aware that such pricing undermines economic efficiency in general and, in particular, the efficiency properties of competitive neutrality in access pricing.[64]

The implication of all this for the pricing of unbundled network elements and access to the LECs' local networks is quite profound. It means that the methods for determination of those prices

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[62]Certainly, one of the authors, William Baumol, and Robert Willig have repeatedly addressed the proper valuation of assets in railroad regulation and have consistently taken the position that replacement cost is the proper test, even when they were testifying on behalf of a railroad that was to be the recipient of access charges.

[63]E.g., Sidak and Spulber at 919, 920, 925, 958.

[64] This is clearly spelled out in the two Baumol-Sidak books on telephone and electricity regulation. See William J. Baumol & J. Gregory Sidak, Toward Competition in Local Telephony 108-9 (1994); William J. Baumol & J. Gregory Sidak, Transmission Pricing and Stranded Costs in the Electric Power Industry (1995).

should preclude any opportunity to set them at supercompetitive levels. The rules proposed by the FCC to carry out the Telecommunications Act do this, and that is one of their major benefits. To block adoption of those rules before their full implications for the future of the Act have been realized would be a profound disservice to consumers.

IV. Concluding Comment

We have found no reason to conclude on the basis of law or economic analysis that the pricing rules accompanying the introduction of competition into the local telephone exchange market must provide for the recovery of the historical costs that incumbent LECs incurred while operating as monopolies. Recovery of historical costs is not required by the Takings Clause or the regulatory compact. And providing for recovery of historical costs would violate the precepts of the competitive market model, which must be observed if the public-interest purposes of the Telecommunications Act are to be realized.

We have also concluded that the constitutional day of reckoning can and should be postponed until the Act is in full operation. Given the nature of the telecommunications industry and the mitigating provisions of the Telecommunications Act, there is substantial reason to think that the introduction of local competition will produce only minimal stranded investment, and perhaps none at all. This is not to say that isolated cases that entail the need for special adjustment will not arise. But it does suggest that there is no reason to abandon the forward-looking pricing standards for competitive access endorsed by economists and many regulators, doing so out of fear that, without substantial alteration, these standards will inevitably give rise to a violation of the Constitution..

Sidak and Spulber have made a considerable contribution to our understanding of an important and complex subject, primarily by reminding us of the importance of protecting investors' legitimate reliance interests. But their discussion is also likely to lead to important misapprehensions, because it does not recognize the special attributes of the telecommunications industry, because it does not take into account competitive-neutrality provisions such as the universal-service fund, and because it does not take note of the critical role of forward-looking costs and forward-looking valuation of assets.

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AFFIDAVIT OF BRADFORD CORNELL
IN SUPPORT OF THE REPLY COMMENTS
OF AT&T CORP.

I. INTRODUCTION

I am a Professor of Finance and Director of the Bank of America Research Center at the Anderson Graduate School of Management at UCLA. In addition, I am President of FinEcon, a firm which provides financial economic consulting services to corporations, law firms and government agencies.

I graduated from Stanford University with an A.B. degree in 1970. Subsequently, I received my M.S. in Statistics in 1974 and my Ph.D. in Financial Economics in 1975, also from Stanford. Since 1975 I have been a professor of finance and I have been at UCLA since 1979. In that capacity I have authored over sixty professional articles. I have written a book entitled *Corporate Valuation*, published by Business One Irwin. In addition to my teaching and research, I have served as an expert witness in securities and commercial litigation. A more detailed summary of my experience is contained in the resume attached as Attachment 2. My professional vitae is included as Attachment 3.

I submit this affidavit in response to the Commision's Notice of Proposed Rulemaking ("NPRM") in CC Docket No. 96-262, Access Charge Reform, released December 24, 1996, and particularly in response to the affidavit of Dr. James Vander Weide included in USTA's comments.

II. SUMMARY

- Dr. Vander Weide has provided insufficient explanation to test the mechanics of his analysis.

- His analysis fails tests of reasonableness. It is based fundamentally on historical book costs, not true market values. It also does not account for other LEC assets which contribute to total return, such as appreciation in organizational capital.

- The LECs would prefer rate of return regulation at the authorized 11.25% rate if they were truly underperforming that rate.

- The comments of Ray Smith directly contradict Dr. Vander Weide's results. Smith stated in Bell Atlantic's annual report that the network business generated substantial excess cash flow which will fund all internal expansion and the development of new businesses.

- Dr. Vander Weide's method contradicts his own prior testimony regarding the use of market versus book values in performing his calculations. Contrary to his statements, he does not arrive at an economic rate of return which can be compared to the LECs' economic cost of capital.

- Telephone holding company returns provide the most objective estimates for evaluating the total returns experienced by LECs. While I believe that these returns may be upwardly biased because telephone holding companies own businesses which are riskier than LECs, the market based returns are based on publicly-available stock prices and the method for calculating them is clear-cut and without controversy. The Commission can use its judgment to estimate the LEC portion of the return.

- The average market-weighted total returns of telephone holding companies owning price cap LECs are:

	1985-95	1991-95
Arithmetic Average	20.43%	15.90%
Geometric Average	18.73%	14.57%

III. THE RATE-OF-RETURN ANALYSIS SET FORTH IN THE AFFIDAVIT OF DR. VANDER WEIDE IS NOT TESTABLE WITHOUT FURTHER EXPLANATION

Dr. Vander Weide suggests that it is important for the Commission to focus on true economic returns of LECs, not on historical accounting rates of return to properly understand productivity, depreciation and sharing. To support this argument, however, he provides a peculiar analysis which employs an amalgamation of both book (i.e. historical cost) and cash flow data to purportedly show an "economic" rate of return on investment for price cap LECs well below the 11.25% authorized by the FCC. Based on the information that Dr. Vander Weide has provided in his affidavit and the source documentation that he cites, his analysis is not testable without further explanation as well

as examination of his underlying workpapers and spreadsheets.

IV. DR. VANDER WEIDE'S ANALYSIS DOES NOT PASS THE TESTS OF REASONABLENESS

Without this critical information, Dr. Vander Weide's analysis has to be examined based on tests of reasonableness. Since the common stock of LECs is not publicly traded, Dr. Vander Weide attempts to use historical gross embedded plant costs, apparently adjusted in 1995 (but perhaps not in 1990) by "investment price indexes", as his proxy for the market value of LEC total capital. Further, he allocates a portion of this total capital to LEC equity by applying the average 5-year LEC book equity/total capital ratio to gross plant costs.

I am very skeptical that this gerryrigged method, which relies on book values and rough index adjustments, could reliably reflect the market value of LEC investment in plant assets, let alone total LEC capital or LEC equity. To calculate an economic rate of return on LEC equity, one must know the market value of LEC equity at the beginning of the analysis period, the amount of all subsequent cash flows (including dividends to the shareholder-parent company), and the market value of all of the LEC's assets at the end of the analysis period (including assets purchased with retained earnings), such as plant, organizational capital (i.e. market-based goodwill), and net working capital. Other than the inclusion of dividends, Dr. Vander Weide's analysis appears to fail on all of these counts.

First, it appears that he has used a historical cost book value plant balance in 1990 as his initial value of LEC equity (V_o in his analysis at Schedule 1, Page 2 of 2). The asset price indexes appearing in the 1994 Total Factor Productivity Review Plan (TFPRP) can be used to adjust a base year historical plant cost to a rough estimate of hypothetical price in a future year. It is important to point out, however, that there is no way that the price indexes can be used to convert 1990 book values to estimates of 1990 market values. How then can this be a reasonable representation of the market value of LEC equity in 1990? The market value of the plant is likely to be considerably different from book value. Book value cannot be used to compute an economic rate of return.

The 1995 value of plant used in his analysis has been adjusted by the 1994 TFPRP price indexes in some fashion according to his affidavit, but Dr. Vander Weide does not describe how he adjusted for 1995, data for which are not included in the 1994 TFPRP. It is immediately troubling that the price-adjusted 1995 value of plant reflected in his analysis is less than the 1994 historical cost of plant (after adjusting for his allocation to equity to put the numbers on a comparable basis).

His analysis could have brought the 1990 embedded plant costs forward to 1995. This approach appears to be incorrect because it excludes the plant additions purchased with retained earnings after 1990, which were substantial in magnitude. According to the 1994 TFPRP (and ARMIS Report for 1995 data), $92 billion of gross additions were made by the LECs from 1991 through 1995. To illustrate the importance of this question, if one were to use all of Dr. Vander Weide's inputs and assumptions, but add the value of each year's gross additions (price-indexed to 1994 prices) allocable to equity according to his book average capital structure, the revised return would be 14.99%, well above the allowed 11.25%.

Alternatively, he may have used the price index to deflate the 1995 historical cost of plant to a 1990 estimate of plant market value. This method also would not be correct, since a 1995 market value estimate would be necessary to calculate a total rate of return.

These asset price indexes appear for three categories of equipment and structures in the 1994 TFPRP. For other issues before the FCC, some experts have used indices which are applicable to six separate categories of assets. In either case, it is questionable whether a broadly constructed asset price index can provide anything more than a rough estimate of market value, given: the multi-billion dollar volume of plant and equipment; the large variety and number of asset categories; the differing asset vintages; the diverse rates of both economic and book depreciation; and differences across LECs as to how assets and depreciation are classified and accounted for.

Moreover, using only plant costs (either historical or adjusted) as the proxy for the market value of LEC equity excludes other assets of a LEC, such as organizational and working

capital. Organizational capital, or market goodwill, is the value of a company over and above the market value of its individual assets. Examples of organizational capital include management expertise; employee loyalty, competence and know-how; good working relationships with customers, vendors and regulators; favorable contracts; efficient policies and procedures; proprietary software; dominant market share; technological superiority; research and development capabilities; brand name value; etc. This organizational capital is something that investors pay for, and the fluctuations in the value of this goodwill is a component of market equity return. If the common stock of LECs were publicly traded, the value of organizational capital would be reflected in the market prices of the stocks.

In contrast, Dr. Vander Weide's analysis assumes that there is no market value to LECs other than the quasi-adjusted historical cost of plant. This is wrong, and certainly has not been the case for the telephone holding company (THC) stocks, which trade at a premium to book value and have appreciated significantly over the period from 1990 through 1995. I will discuss equity returns achieved by the THCs in greater detail in a later section of this affidavit.

V. THE LECS WOULD NOT ADVOCATE PRICE CAP REGULATION IF THEY WOULD MAKE LESS THAN UNDER RATE OF RETURN REGULATION

If Dr. Vander Weide's analysis of total economic return was correct, then the LECs would not be aggressively endorsing price cap regulation as in fact they are. It would be far preferable to take the higher guaranteed return provided under rate regulation. I have also been advised that all but two of the price cap LECs have elected the most aggressive Productivity Factors, indicating confidence in their ability to maximize their cash flows.

VI. INFORMATION PROVIDED BY THE LECs CONTRADICTS DR. VANDER WEIDE'S RETURN CONCLUSIONS

Intuitively, dominant market-share companies like the LECs which have been held in high regard by Wall Street (through their holding company parents) should not be doing poorly. As an example, comments made to the investing public by Bell Atlantic indicate that the LEC business is an extraordinary generator of excess cash flow. Raymond Smith,

Chairman and Chief Executive Officer of Bell Atlantic, advised shareholders in the company's 1995 annual report:

- "In our core network, we foresee continued strong earnings growth, fueled by solid business volumes, increasing demand for new services, and continued cost improvements. With market pricing, low costs, and our robust technology platform enabling a steady stream of new products, we are very well-prepared to compete with new entrants in our local markets."[1]
- "Last year saw the biggest single-year increase in new residential access lines since World War II-- driven not by population growth, but by growing demand for second telephone lines and data connectivity..."[2]
- "Our modern network-- combined with rigorous cost control-- helped us improve our operating efficiency by almost 10 percent in 1995 and has enabled us to improve margins while offering customers some of the lowest prices in the industry."[3]
- "Our flagship businesses-- network and wireless-- have a proven track record of creating value for shareowners and are a growing source of free cash that will fund not only their own future expansion, but also our move into the new growth markets I've told you about."[4]

VII. DR. VANDER WEIDE CONTRADICTS HIS PRIOR TESTIMONY REGARDING THE USE OF MARKET VALUE CAPITAL STRUCTURES

I have reviewed several testimonies filed by Dr. Vander Weide in state TELRIC arbitrations around the country. In these testimonies, he has stated repeatedly that "financial and economic theory require the use of market value weights to calculate the weighted average cost of capital. Economists unanimously reject the use of book values capital structures to estimate the weighted average cost of capital because book value depend on arbitrary accounting conventions, are based on historical costs, and are inherently backward looking."[5] In his testimonies he has consistently argued that, for estimating the cost of capital for LECs, one should use market value capital structures, which he approximates by using an average market value capital structure of S&P Industrial companies.

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[1] 1995 Bell Atlantic Annual Report, Chairman's Letter to Shareholders, pg. 3 (from the Bell Atlantic internet site)
[2] Ibid, pg. 4
[3] Ibid, pg. 5
[4] Ibid, pg. 10
[5] Rebuttal Testimony of Dr. James H. Vander Weide, Before the Public Service Commission of Delaware, February 11, 1997, pg. 11.

Astoundingly, in his affidavit filed in this proceeding, Dr. Vander Weide excoriates accounting rates of return but then proceeds to use-- in addition to historical costs-- an average book capital structure to estimate the economic return. He then purports to compare the resulting "economic return" with the Commission's 11.25% rate of return benchmark. He states in his affidavit that "economic rates of return are the only rates of return than can be meaningfully compared to the LECs' economic cost of capital." Because the LECs' cost of capital according to Dr. Vander Weide must be calculated using market value capital structures, his own testimony in his FCC affidavit indicates that he should have used the market capital structure to estimate the economic rate of return for comparison purposes. As noted previously, Dr. Vander Weide's analysis seems to be based fundamentally on historical costs, not market values. A historical cost book value analysis will not result in the estimation of economic rates of return.

VIII. MARKET-BASED TELEPHONE HOLDING COMPANY TOTAL RETURNS ARE A MORE REPRESENTATIVE PROXY FOR LEC RETURNS

The THCs have publicly-traded stock. Thanks to the availability of stock price information, accurate total returns can be calculated without controversy, and the need to use questionable data and peculiar analyses is eliminated. This also satisfies Dr. Vander Weide's suggestion in his TELRIC proceedings testimonies that finance and economic theory require the use of market, not book information. However, THCs, which own the LECs, also own other businesses. Because the LEC business is so dominant in its markets, the other businesses owned by THCs are riskier, and hence have a higher cost of capital than does the LEC business. Therefore, the ex-post returns realized by the THCs may be an upwardly-biased estimate of LEC returns due to the riskier businesses. Nevertheless, as the LEC companies are substantial assets owned by most of the THCs, these returns are a better estimate of the economic returns experienced by the LECs in comparison to what Dr. Vander Weide has provided. The THC total returns are accurate figures which the Commission can review. The Commission can use its own best judgment as to how much of the returns arise from the LEC business.

Over the 5-year period from 1991 through 1995, the market-weighted average of the

arithmetic mean returns realized by publicly-traded THCs owning price cap LECs was 15.90%. Over the same period, the market-weighted average of the geometric mean returns realized by publicly-traded THCs owning price cap LECs was 14.57%.

Over the 10-year period from 1985 to 1995, the market-weighted average of the arithmetic mean returns realized by publicly-traded THCs owning price cap LECs was 20.43%. Over the same period, the market-weighted average of the geometric mean returns realized by publicly-traded THCs owning price cap LECs was 18.73%.

Attachment 1 indicates the annual returns by THC included in the sample and summary averages.

It is worth noting on this point that Dr. Vander Weide has not agreed with my opinion that the THCs as a whole are riskier than the LEC business in his TELRIC proceedings testimonies. For example, he stated in the Bell Atlantic-Delaware proceeding:

- ". . . Do you agree with Professor Cornell's contention that Bell Atlantic is more risky than BA-Del?

A. No. Telecommunications companies such as BA-Del are experiencing a high degree of technological uncertainty. As a facilities-based provider, BA-Del must place very large bets on the best technology for providing wireline telecommunications service in Delaware. Bell Atlantic has the opportunity to reduce the risks of rapid technological change by hedging some of its bets on the most efficient technology for providing telecommunications services. In particular, Bell Atlantic can invest in both wireline and wireless technologies, while BA-Del cannot. In addition, as compared to BA-Del, Bell Atlantic can diversify geographically, offer a wider variety of products and services, and can achieve economies of scale associated with greater size and financial strength."

Although clearly incorrect, if one were to accept Dr. Vander Weide's argument from the TELRIC proceedings, the returns realized by the publicly-traded THCs would likely represent a downwardly-biased estimate of the returns experienced by LECs over the

period 1991 through 1995. If Dr. Vander Weide had followed his own argument for purposes of his Access Charge affidavit, he could have used the easily-calculated THC total returns and avoided his more dubious analysis.

ATTACHMENT 1

Annual Total Return of Telephone Holding Companies Which Own Price Cap LECs [1]

	AMERITECH	BELL ATLANTIC	BELL SOUTH	NYNEX	PACTEL	SBC	US WEST	GTE	ALLTEL	CINCINNATI BELL	SO. NEW ENGLAND	CENTURY TELEPHONE	FRONTIER	LINCOLN TELECOM [2]	SIMPLE AVERAGE	MKT-WEIGHTED AVERAGE
1985	48.99%	42.66%	51.97%	41.78%	32.45%	30.40%	33.40%	21.83%	30.82%	39.38%	33.48%	56.58%	26.05%	44.42%	38.16%	38.37%
1986	30.84%	33.84%	24.40%	38.60%	33.30%	40.06%	28.75%	34.72%	40.50%	55.30%	26.37%	25.93%	22.33%	27.39%	33.02%	32.49%
1987	1.41%	1.76%	-0.37%	5.83%	6.02%	-2.49%	0.59%	-3.08%	15.46%	25.70%	-11.43%	34.42%	0.29%	14.26%	6.31%	1.31%
1988	19.19%	15.92%	15.90%	9.18%	22.95%	25.14%	20.26%	34.14%	31.53%	82.99%	27.27%	134.38%	28.69%	35.78%	35.95%	20.82%
1989	49.30%	62.02%	52.79%	44.45%	70.29%	66.40%	46.56%	65.38%	66.57%	27.71%	72.51%	73.83%	64.72%	93.85%	61.17%	57.42%
1990	3.34%	1.03%	-0.62%	-17.38%	-5.98%	-7.84%	2.47%	-11.97%	-8.78%	-11.80%	-23.02%	-11.15%	-24.28%	-17.67%	-9.55%	-5.23%
1991	0.42%	-5.32%	-0.25%	20.57%	3.64%	21.46%	3.00%	24.85%	18.97%	-13.38%	1.95%	-2.11%	15.58%	-6.52%	5.92%	7.52%
1992	18.54%	12.25%	4.78%	10.13%	4.59%	19.80%	7.16%	5.51%	26.97%	-7.38%	18.35%	43.00%	16.43%	14.58%	13.91%	10.34%
1993	12.14%	21.19%	18.56%	0.89%	27.58%	16.51%	25.44%	6.33%	27.49%	9.23%	6.88%	-8.93%	31.68%	46.83%	17.27%	15.55%
1994	10.52%	-11.71%	-2.26%	-2.41%	-4.55%	0.98%	-18.16%	-7.91%	5.52%	-1.00%	-5.23%	15.88%	-3.07%	-5.01%	-2.03%	-4.21%
1995	52.05%	41.10%	67.68%	53.21%	26.13%	46.76%	69.46%	52.11%	1.37%	110.57%	28.93%	8.82%	47.13%	28.37%	45.26%	50.31%
1985-95 Arithmetic Average	22.43%	19.52%	21.14%	18.62%	19.68%	23.38%	19.90%	20.17%	23.31%	28.85%	16.01%	33.70%	20.51%	25.11%	22.31%	20.43%
1985-95 Geometric Average	21.02%	17.54%	18.93%	16.62%	17.93%	21.59%	17.68%	17.86%	21.78%	23.56%	13.38%	28.24%	18.17%	21.78%	20.53%	18.73%
1985-95 Cumulative Growth [3]	715.5%	491.6%	573.2%	442.8%	513.6%	758.7%	499.2%	509.5%	773.7%	924.6%	297.9%	1442.5%	527.3%	773.4%	679.8%	560.8%
1991-95 Arithmetic Average	18.73%	11.50%	17.70%	16.48%	11.48%	21.10%	17.38%	16.18%	16.06%	19.61%	10.18%	11.33%	21.55%	15.65%	16.07%	15.90%
1991-95 Geometric Average	17.54%	9.92%	15.22%	14.90%	10.74%	20.23%	13.94%	14.43%	15.55%	12.81%	9.52%	9.96%	20.37%	13.91%	15.03%	14.57%
1991-95 Cumulative Growth [3]	124.3%	60.5%	103.1%	100.3%	66.5%	151.2%	92.0%	96.2%	106.0%	82.7%	57.6%	60.8%	152.7%	91.8%	101.4%	97.4%

[1] Excludes United LEC's which are subsidiaries of Sprint.
[2] Data provided by CRSP based on monthly observations.
[3] Assuming reinvestment of dividends.

Sources: Dow Jones News Retrieval; Omega Research Inc

ATTACHMENT 2

BRADFORD CORNELL

Selected Litigation and Consulting Experience by Area

VALUATION OF COMPANIES AND PROPERTY RIGHTS

Orange County v. Merrill Lynch et al. Retained by Michael Hennigan and Jim Mercer of Hennigan, Mercer and Bennet, the special counsel for Orange County and Orange County District Attorney William Overtoom to value the County's portfolio, analyze its risk exposure at various points in time and determine the impact of various trades on the performance of the portfolio. Testimony in bankruptcy court, December 1994. Testimony before the Grand Jury, February 1996

Fibreboard Corporation Asbestos Litigation. Retained by Michael Molland of Brobeck, Phleger & Harrison, attorneys for Fibreboard to develop a to estimate future investment performance of the settlement fund and to develop computer model to simulate the ability of the future to pay future claims and expenses. Deposition December 1993. Trial testimony January 1994.

Columbia Gas Transmission Corporation v. Columbia Gas Systems, Inc. Retained by Sidley and Austin to provide valuation analysis related to the bankruptcy of Columbia Gas Transmission Corporation. Analysis focused on valuation, solvency and the usefulness of the independent lender test to determine under capitalization. Deposition and trial testimony, October 1994.

Rodime Patent Litigation. Retained by Robert Sacks of Sullivan and Cromwell on behalf of Rodime to evaluate the damages to Rodime from Seagate's failure to honor patents related to the development of 3 1/2 inch hard drives. Deposition January 1994.

Sunkyong America, Inc. v. Pinkerton's, Inc. Retained by Elizabeth Mann of Howrey and Simon to estimate the damages, if any, associated with Pinkerton's alleged improper acquisition of excess inventory from Sunkyong America. Deposition January 1994.

Insurance Commissioner of California v. Executive Life Insurance Co. Retained by Kenneth Heitz of Irell & Manella and Ted Miller of Sidley & Austin, attorneys for Altus France, to opine whether the transaction in which Altus France purchased a portfolio of high-yield bonds from Executive Life was financially fair. Declaration August 1993. Judge Lewin ruled the transaction was fair in September 1993.

Hawkins v. Arthur D. Little. Retained by Russell Sauer of Latham and Watkins, attorney for Arthur D. Little, to value Arthur D. Little's valuation subsidiary. Deposition March 1993. Case settled November 1993.

Leonard Green & Partners v. Roger B. Wachtell. Retained by Michael Hennigan of Howrey and Simon to value a general partnership interest in Green Equity Investors, a leverage buyout fund managed by Leonard Green & Partners. Deposition August 1992.

Salomon Brothers Profit Analysis. Retained by Salomon Brothers to work in conjunction with the firm's staff and attorneys from Cravath, Swaine & Moore and Munger, Tolles & Olson to estimate profits earned by Salomon as a result of improper bidding in auctions of U.S. Treasury securities. Report November 1991.

Burlington Northern Valuation Litigation. Retained by Jim Richmond from the Attorney General's Office in Washington and by C.A. Daw of Chandler, Dillon & Allyn to analyze appraisal of Burlington Northern Railroad. Deposition July 1991. Trial Testimony in Washington July 1992. Trial testimony in Iowa October 1992.

CF&I Fabricators of Utah v. The Pension Benefit Guarantee Corporation. Retained by John Labovitz of the law firm of Steptoe & Johnson attorneys for the Pension Benefit Guarantee Corporation to determine the appropriate rate for discounting the company's pension liabilities. Trial testimony November 1992. In January 1993, the judge ruled in favor of the Pension Benefit Guarantee Corporation on this issue.

Golden State Transit v. The City of Los Angeles. Retained by Alan Rothenberg of Latham and Watkins, attorney for the City of Los Angeles, to estimate the value of Golden State Transit as of the end of the spring of 1981 for the purpose of computing damages. Deposition testimony March 1991 and April 1991. Declaration April 1991. Trial testimony June 1991.

Beverly Enterprises v. Bernard A. Magdovitz. Retained by Henry Kupperman of Brobeck, Phleger & Harrison, attorneys for Laventhol & Horwath, to analyze the relation between accounting information and corporate valuation in the context of a corporate acquisition. Deposition testimony July 1990.

ATT v. State Board of Equalization. Retained by Ed Hollingshead of the California State Attorney General's Office to analyze the State Board of Equalization's valuation of ATT real property for tax purposes. Deposition testimony September 1989. Trial testimony October 1990.

Weller v. ABC. Retained by Paul Flum of Morrison & Foerster, San Francisco, attorneys for ABC, to estimate the alleged lost business damages resulting from the broadcast of an investigative reporting series. Deposition testimony October 1986. Trial testimony April 1989.

Crocker Bank v. The City of San Francisco. Retained by James Bennett of Morrison & Foerster, San Francisco, attorneys for Crocker Bank, to analyze the present value of calculations of the net costs imposed on the municipal transit system by new construction activity. Deposition testimony January 1984. Trial testimony May 1984.

Atchison, Topeka and Santa Fe, et al. v. The State of California. Retained by Ed Hollingshead of the California State Attorney General's Office to evaluate appraisals prepared by the railroads' experts. Deposition testimony January 1984. Trial testimony July 1984.

Union Pacific v. State of Idaho. Retained by C. A. Daw of the Idaho Attorney General's Office to testify on the value of Union Pacific Railroad. Deposition testimony September 1983. Trial testimony January 1984.

Trailer Train v. The State of California. Retained by the California Board of Equalization and the Attorney General's office to evaluate whether Trailer Train was earning a competitive rate of return on its investment in railroad cars. Testimony before the Board of Equalization January 1983. Trial testimony July 1983.

ENVIRONMENTAL IMPACT AND INSURANCE MATTERS

Mentor Implant Litigation. Retained by William Griffin of Brobeck, Phleger and Harrison on behalf of Mentor to analyze the impact of settlements and judgments of breast implant litigation on Mentor's ability to survive as a going concern. Declaration August 1993.

Southern California Gas Co. v. Texaco, et. al. Retained by Steven Marenberg of Irell & Manella and Steven O'Neill of Shephard, Mullin on behalf of a group of oil companies including Texaco, Shell and Exxon to estimate the damages associated with the delivery of gas with an unusually high level of nitrous oxide. Deposition January 1995.

FINANCIAL INSTITUTIONS

RTC v. Stroock, Stroock & Lavan. Retained by Peter D. Keisler and David L. Lawson of Sidley & Austin, attorneys for Stroock, Stroock & Lavan, to evaluate damages, if any, associated with investment in high yield bonds by Commonwealth Savings and Loan, and to analyze the impact of those investments on the institution's growth. Deposition December 1993. Trial Testimony April 1994. Summary judgment was granted in favor of Stroock by Federal Judge Gonzalez.

Ahmanson v. Salomon. Retained by Robert Mazur and Douglas Liebhafsky of Wachtell, Lipton, Rosen & Katz to evaluate the analysis performed by Salomon with regard to Ahmanson's acquisition of the Bowery and to value certain income maintenance contracts between the Bowery and the FDIC. Expert report September 1993. Case settled September 1993.

Gill vs. American Savings Bank. Retained by Al Karel of Brobeck, Phleger and Harrison on behalf of the FDIC to estimate the value and solvency of American Savings at specific time periods, and to estimate the value of notes transferred between American Savings and its parent corporation, Financial Corporation of America.

Study of the Secondary Market for LDC Debt. Retained by the law firm of Munger, Tolles and Olson on behalf of special committees of the Boards of Directors of the Bank of America and Security Pacific National Bank to analyze the nature of the secondary market for LDC debt and to determine whether there was evidence that Security Pacific's trader executed trades that were below "market prices." Report and presentation to the special committee of the Security Pacific Board, September 1991. Presentation to the special committee of the Bank of America Board, June 1992.

Dai-ichi Kangyo Bank et. al. v. Bank of America. Retained by a consortium of law firms including Skadden, Arps, Slate, Meagher & Flom; Willkie, Farr & Gallagher; Jones, Day, Reavis & Pogue; and Sherman & Sterling representing eight of the world's largest banks including DKB, Sumitomo, Mitsubishi, Citibank and Rabobank Nederland to estimate the damages resulting from the improper servicing of government insured student loans. I worked primarily with Richard Drooyan of Skadden, Arps and Francis Menton of Willkie, Farr. Damage report September 1991. Deposition November 1991. Case settled March 1992.

ISSUES RELATED TO CORPORATE CONTROL TRANSACTIONS

SCI Television v. Ronald O. Perelman. Retained by Paul Rowe of Wachtell, Lipton, Rosen & Katz, attorneys for Mr. Perelman, to evaluate aspects of the question regarding whether fair consideration was paid when SCI Television purchased the stock of New World Entertainment and Four Star International. Declaration March 1994.

Tucson Electric Power v. SCE Corp. Retained by the law firm of Munger, Tolles and Olson on behalf of SCE Corp. to analyze the impact of SCE's bid for San Diego Gas and Electric on Tucson Electric Power in light of TEP's pending merger with SDG&E at the time of the bid. Deposition August 1992. Case settled September 1992.

Knudsen Milk Producers Litigation. Retained by Richard Posell of Shapiro, Posell & Close to evaluate the leveraged buyout of Foremost by Winn Enterprises from a financial standpoint. Deposition August 1992. Case settled September 1992.

Maxus v. Kidder, Peabody & Co. Retained by Marc Palay of Jones, Day, Reavis & Pogue to analyze the behavior of Natomas stock price prior to a bid by Diamond Shamrock to determine whether the price of Natomas was affected by trading by Ivan Boesky and, if so, to estimate the resulting impact on the price paid by Diamond Shamrock to acquire Natomas. Deposition July 1992. Case settled October 1992.

Epstein v. MCA. Retained by Paul Rowe of Wachtell, Lipton, Rosen & Katz and by John Spiegel of Munger, Tolles & Olson, attorneys for MCA and Matsushita, to compare the value of preferred stock to be received by Mr. Wasserman with the value of the $66 cash tender offer made to MCA shareholders. Declaration December 1990. Case decided in favor of MCA December 1990.

Rudd et. al. v. Kerkorian et. al. Retained by Michael Hennigan of Hennigan & Mercer, Los Angeles, attorneys representing the shareholders of United Artists, to provide a valuation of the United Artists Film Library and related assets in connection with the formation of New United Artists. Two declarations May 1989. Deposition testimony June 1990. Case settled September 1990.

Colan v. Mesa Petroleum. Retained by Darryl Snider of Brobeck, Phleger & Harrison, attorneys for Unocal, to evaluate the economics of the purchase of a large block of Unocal shares by Mesa partners via Jefferies & Co. Affidavit December 1988. Deposition testimony September 1989. Case settled January 1993.

Heckmann et. al. v. Ahmanson, et. al. Retained by Michael Hennigan of Hennigan & Mercer, Los Angeles, attorneys representing the shareholders of Walt Disney Productions, to estimate the

damages to shareholders resulting from the Disney's repurchase of shares from Reliance, Inc. at a premium price. Deposition testimony June 1989. Trial testimony July 1989. Case settled July 1989.

Anheuser Busch v. Paul Thayer, et. al. Retained by Paul Wolff and Lewis Ferguson of Williams & Connolly, Washington, D.C., attorneys for Anheuser Busch to determine if insider trading of Campbell Taggart, Inc. had an impact on the company's stock price and caused Anheuser Busch to pay an inflated price when it acquired Campbell Taggart. Deposition testimony December 1987 and March 1988.

Newhall Land and Farming Class Action. Retained by James Schropp of Fried, Frank, Harris, Shriver & Jacobson and Luther Orton of Brobeck, Phleger & Harrison, attorneys for Newhall Land, to analyze the impact of partnership amendments on the welfare of unitholders. Affidavit May 1988.

CLASS ACTION AND GENERAL SECURITIES LITIGATION

Nuveen Fund Litigation. Retained by Bruce Gerstein of Garwin, Bronzaft, Gerstein and Fisher to assess damages to shareholders arising from ultra vires rights offerings of two Nuveen closed-end bond funds. Presented findings at mediation July 1996.

Rosenbaum et. al. v. National Medical Enterprises. Retained by Robert Warren of Gibson, Dunn & Crutcher on behalf of NME to analyze the extent of potential damages associated with alleged failures to disclose problematic practices at the company's psychiatric hospitals. Testimony at settlement hearing before Judge Irving July 1993. Follow-up report June 1994.

George J. Wade, et al. v. Industrial Funding Corp., et al. Retained by Evan Schwab of Bogle & Gates on behalf of Industrial Funding Corp. to analyze the damages, if any, associated with alleged violations of Rule 10(b)-5 and Section 11 with respect too release of information regarding the quality of the company's existing lease portfolio and future earnings expectations. FinEcon also analyzed the adequacy of the risk factors contained in the Prospectus and the untimeliness of plaintiffs' filing their class action complaint. Declaration June 1994.

Heart Technology Class Action. Retained by Evan Schwab of Bogle & Gates on behalf of Heart Technology to analyze the damages, if any, associated with alleged violations of Section 10b-5 and Section 11 with respect to release of information regarding the development and financing of a new medical device. Deposition January 1994.

Cement Masons Pension Trust Arbitration. Retained by the Cement Masons Pension Trust and Mitchell Hutchins, the investment advisor to the Trust, to help settle a dispute regarding investments in mortgage backed securities on behalf of the Trust. The matter was settled in December 1993.

First Fidelity Bancorporation v. National Union Insurance Co. Retained by Gary Battistoni and Stuart Law of Drinker, Biddle & Reath on behalf of First Fidelity to analyze the impact of disclosures made by the bank on the price of its common stock and to estimate related damages. Deposition December 1992.

Mentor Corp. Class Action. Retained by Darryl Snider of Brobeck, Phleger & Harrison, attorneys for Mentor to evaluate the impact on Mentor's stock price of information regarding FDA evaluation of a new medical device. Deposition August 1992.

Salomon Forex, Inc. v. Laszlo N. Tauber. Retained by William D. Iverson of Covington & Burling on behalf of Salomon Forex to analyze the impact of bids in various Treasury auctions on foreign exchange rates and to study the prices received by Dr. Tauber in transactions involving forward and option contracts on foreign exchange. Deposition February 1992. Two declarations March 1992. Salomon Forex was awarded summary judgment on all counts in March 1992.

State of West Virginia v. Morgan Stanley & Co. and Goldman, Sachs & Co. Retained by Scott Wise of Davis, Polk & Wardwell and Norman Feit of Sullivan & Cromwell on behalf of Morgan Stanley & Co. and Goldman, Sachs & Co. to analyze trading by the State of West Virginia in government securities. Deposition December 1991. Trial testimony April 1992. Jury awarded $4 million in damages to the state, but found no evidence of fraud. Prior to my testimony the judge ruled as a matter of law that over $32 million in damages were caused by ultra vires transactions. The case is on appeal.

FHP International Corp. Class Action. Retained by John Spiegel of Munger, Tolles & Olson, attorneys for FHP, to analyze the impact of disclosures by FHP about ongoing developments in the health maintenance organization business and about FHP's marketing practices on the price of FHP's stock. Declaration March 1992.

Ramtek Corp. Class Action. Retained by Charles Patterson and Kenneth Hagen of Pillsbury, Madison & Sutro, attorneys for Sidler Amdec Securities to analyze the pricing of Ramtek convertible debentures in light of various disclosures by the firm. Deposition October 1991. Case settled March 1992.

DeLaurentiis Entertainment Group Class Action. Retained by William Lerach and Kirk Hulett of Milberg, Weiss, Bershad, Specthrie & Lerach, San Diego, attorneys for the DEG shareholders to estimate what the value of DEG would have been had the company made additional disclosures following the issuance of DEG stock. Deposition March 1991.

Saatchi & Saatchi Class Action. Retained by Darryl Snider of Brobeck, Phleger & Harrison, attorneys for Saatchi & Saatchi, to analyze the impact of disclosures made by Saatchi on the price of the company's securities. Declaration February 1991.

Miniscribe Class Action. Retained by Cary Lerman of Munger Tolles & Olson, Robert Gooding of Howard, Rice, Nemerovski, Robertson & Falk and James Scarboro of Arnold & Porter, attorneys representing Miniscribe and its management, to evaluate the economic issues involved in a variety of class action lawsuits filed on behalf of the shareholders and bondholders of Miniscribe. SEC submission November 1990. Declaration December 1990.

Carolco Pictures Class Action. Retained by William Lerach and Eugene Mikolajczyk of Milberg, Weiss, Bershad, Specthrie & Lerach, San Diego, attorneys for Carolco shareholders to analyze the economic impact on the shareholders of Carolco's repurchase of shares from Mario Kassar and related transactions. Declaration November 1990. Amended declaration December 1990.

City of San Jose v. Paine, Webber, Jackson & Curtis, et. al. Retained by Jan Adler of Milberg, Weiss, Bershad, Specthrie & Lerach, San Diego, attorneys for the City, to evaluate the financial risk of leveraged trading in government securities and to calculate damages to the City from unsuitable transactions in government securities. Declaration June 1989. Deposition testimony August, September and October 1989. Trial testimony May 1990. Jury awarded plaintiffs $30 million in damages June 1990.

First Interstate Class Action. Retained by John Spiegel of Munger, Tolles & Olson, attorneys for First Interstate, to analyze the impact of disclosures made by the bank on the price of their common stock and to estimate related damages. Prepared detailed charts and valuelines. Case settled September 1990.

Altos Computer Class Action. Retained by Jerome Congress of Milberg, Weiss, Bershad, Specthrie, & Lerach, New York, attorneys representing the Altos shareholders, to estimate the damages resulting from the alleged failure of Altos Computer to disclose relevant information about market conditions when issuing stock in 1982. Deposition testimony April 1989.

Washington Public Power Supply System (WPPSS) Class Action. U.S. District Court for the Western District of Washington, M.D.L. No. 551. Retained by Leonard Simon of Milberg, Weiss,